

Student Learning Outcomes

Natural History/Field-2009

Five College Learning Outcomes:

- 1. Written, Oral and Visual Communication:** *Communicate effectively in writing, orally and/or visually using traditional and/or modern information resources and supporting technology.*
- 2. Scientific and Quantitative Reasoning:** *Locate, identify, collect, and organize data in order to then analyze, interpret or evaluate it using mathematical skills and/or the scientific method.*
- 3. Critical Thinking:** *Differentiate between facts, influences, opinions, and assumptions to reach reasoned and supportable conclusions.*
- 4. Problem Solving:** *Recognize and identify the components of a problem or issue, look at it from multiple perspectives and investigate ways to resolve it.*
- 5. Information Literacy:** *Formulate strategies to locate, evaluate and apply information from a variety of sources - print and/or electronic.*

I. Degrees and Certificates

1. What degrees and certificates does your discipline offer?

The Life & Earth Sciences Department has separated the Natural History Program from Majors Biology and Allied Health. The Natural History Program offers a Certificate in Natural History.

2. Keeping in mind the five College Learning Outcomes above as well as what your discipline specifically requires of your graduating students, what should students be able to do when they have completed your discipline's requirements for each degree or certificate?

Once students have completed the course work and field experience required to earn a Certificate in Natural History they should be able to:
Locate, identify, collect, and organize data in order to then analyze, interpret or evaluate it using mathematical skills and/or the scientific method. Differentiate between facts, influences, opinions, and assumptions to reach reasoned and supportable conclusions. Recognize and identify the components of a problem or issue, look at it from multiple perspectives and investigate ways to resolve it. Formulate strategies to locate, evaluate and apply information from a variety of sources - print and/or electronic.

3. How do students in your program demonstrate that they meet each of the college-wide learning outcomes? What courses, activities, and/or projects are students required to complete that relate to each outcome?

i. Written, Oral and Visual Communication

Students demonstrate that they meet the written, oral and visual communication SLO in all courses required for completion of the Natural History Certificate. All students must write scientific papers. Subjects range from bird behavior and nesting observations in ornithology to zonation studies in the Sierra Nevada require for general and field ecology courses.

ii. Scientific and Quantitative Reasoning

Students demonstrate that they meet the Scientific and Quantitative Reasoning SLO in all courses required for completion of the Natural History Certificate. An example of an activity that relates to this outcome is studying the invertebrate diversity and densities in the rocky intertidal community. Students locate, identify, collect, and organize data on invertebrates and then analyze, and evaluate the data using statistical analysis and then interpret the results using the scientific method.

iii. Critical Thinking

Students demonstrate that they meet the critical thinking SLO in all courses required for completion of the Natural History Certificate. Science, by its very nature and methodologies, differentiates between facts and subjective influences and opinions. If reasonable assumptions are considered they must be compelling and show evidence to be able to reach reasoned and supportable conclusions. In all science courses we discuss the environmental issues so important in today's world and students are constantly using critical thinking skills to evaluate and interpret the science vs the politics when analyzing these issues as well as projects that use the scientific process.

iv. Problem Solving

Students demonstrate that they meet the problem solving SLO in all courses required for completion of the Natural History Certificate. The scientific method is central to all science courses. In the field students practice developing problems (asking questions), developing a null hypothesis that is testable, developing testable methods and interpreting the results. In this way they learn to recognize and identify the components of a problem or issue, look at it from multiple perspectives and investigate ways to resolve it.

v. Information Literacy

Students demonstrate that they meet the information literacy SLO in all courses required for completion of the Natural History Certificate. All scientific projects require that students figure out ways to locate, evaluate and apply information from the campus library, internet, scientific journals as well as local organismal collections such as those housed at California Academy of Sciences. The first step in the scientific process to observe or rely on observations by scientists and results of their experimentation.

II. General Education:

1. Does your discipline offer any classes which count for general education requirements?

2. Which General Education courses in your discipline address the each of the five College Learning Outcomes? Please list courses for each of the following:

i. Written, Oral and Visual Communication

ii. Scientific and Quantitative Reasoning

iii. Critical Thinking

iv. Problem Solving

v. Information Literacy

III. Course Level Outcomes:

1. Do all of your Course Outlines of Record include Student Learning Outcomes? If not, are you revising them?

Not all of them do but we are in the process of revising them.

2. What percentage of faculty members in your discipline include SLOs in their course syllabi?

Unknown.

3. Assessment:

i. How often do you assess these SLOs?

Constantly, as we assess the success of our students when they graduate and inform us of their progress.

3. Assessment:

ii. In the last two years every discipline developed SLOs specifically related to College Learning Outcome #3: Critical Thinking. Have you assessed this or any of the stated Student Learning Outcomes in your course outlines over the last year? If so, please summarize the results.

No we have not.

3. Assessment:

iii. What improvements have you made or do you plan to make in the future?

We plan to improve our assessment methods in the future.

3. Assessment:

iv. What do you plan to assess this year? Who will you assess? How will you assess?

We plan to assess the marine biology and general ecology courses this year. We will assess the students and whether or not SLOs are compelling or not. We will use questionnaires and directly question a random assortment of students currently participating in the program.